SLOW IT DOWN
AND DIAGNOSTIC PROGRAM
INSTRUCTIONS
FOR USING THE
HAPPY 810 ENHANCEMENT

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IMPORTANT WARNING

READ THIS INSTRUCTION MANUAL COMPLETELY
BEFORE USING A DISK DRIVE ENHANCED
WITH THE HAPPY 810 ENHANCEMENT

THIS WILL ALLOW YOU TO AVOID POSSIBLE
DAMAGE TO YOUR DISKETTE LIBRARY

RULES FOR DISK DRIVE USAGE
IMPORTANT REMINDERS

1) Never insert or remove disks when the disk drive is active (when the top red light is on).

2) Never turn the disk drive on or off while a diskette is inserted.

3) Always place a write protect tab on a disk, remove this only when you intend to write on the disk. Keep a supply of write protect tabs handy.

NEW RULES FOR THE
HAPPY 810 ENHANCEMENT

1) DOS formatted disks are always safe to use in the "FAST MODE".

2) Purchased software items on diskettes should always be protected with a write protect tab. Some copyguarded disks may not work with the "FAST MODE". In fact some copyguarded disk programs may misinterpret "FAST MODE" as a pirated copy and may attempt to erase your disk or backup.

Before trying to read in a purchased software item for the first time, be sure there is a write protect tab on it. Some disks may not work correctly with a write protect tab. Always backup these disks before removing the write protect tab, or run SLOW IT DOWN.

The HAPPY 810 ENHANCEMENT does not erase disks, but a purchased software items which misinterprets "FAST MODE" as a pirated copy might!

SLOW IT DOWN
WHEN TO USE IT

RPM PROGRAM

Use SLOW IT DOWN when you are going to use an RPM program on your disk drive. Without running SLOW IT DOWN, a standard RPM program will not function correctly, and will show a very fast RPM. This is not correct, the 810 ENHANCEMENT does not cause the disk to turn faster. If you run the SLOW IT DOWN program, these standard RPM programs will now function correctly.

European users will find that most RPM programs will not read correctly with the PAL 50 Hz television system. Instead of showing 288 RPM, they show 288 times 60/50 = 346 RPM, even though the RPM is really 288. Sixty Hz is the American NTSC vertical retrace rate, and 50 Hz is the European PAL vertical retrace rate, which most programs rely on for RPM measurements.

For this purpose HAPPY COMPUTING provides an easy to use and accurate RPM program for use with an ENHANCED disk drive. This program does not require running SLOW IT DOWN, and will read correctly on both 50 and 60 Hertz systems.

COPYGUARDED DISKS

Use slow it down to run copyguarded disks which will not work correctly in the "FAST MODE". Note that the current revision of the HAPPY BACKUP PROGRAM has a feature to force backup copies to be produced in a way such that they will automatically run in the "SLOW MODE", without running SLOW IT DOWN. See the HAPPY BACKUP PROGRAM instructions.

SLOW IT DOWN
AND DIAGNOSTIC

The SLOW IT DOWN and DIAGNOSTIC programs are on the back side of your HAPPY BACKUP PROGRAM disk. Below and on the next page are the instructions for using these programs.

SLOW IT DOWN WHAT IT DOES

SLOW IT DOWN reprograms your ENHANCED disk drive in such a fashion as to restore the original unenhanced slower reading function. In addition SLOW IT DOWN locks out the programability of your enhanced disk drive making it appear to the personal computer as a standard unenhanced 810 disk drive.

Once SLOW IT DOWN is executed it prevents mischievious software suppliers from tampering with your enhanced 810's programability, and from detecting the presence of the 810 ENHANCEMENT, which some software suppliers may object to due to its backup capability.

Once SLOW IT DOWN has been executed, the only way possible to restore the "FAST MODE" and drive programability is to turn the disk drive off, and then on again. DO NOT TURN THE DISK DRIVE OFF AND ON WITH A DISK INSERTED!

SLOW IT DOWN
HOW TO RUN IT
(DRIVE ONE ONLY)

1) Turn your computer off. Remove any game cartridges. It is not necessary to remove the BASIC cartridge.

2) The disk drive may have been already turned on. If it isn't then do this now. Wait for the upper "DRIVE ACTIVE" light to go out.

3) Insert the HAPPY BACKUP/SLOW IT DOWN disk with the label side down into the disk drive, turn the personal computer on.

4) The computer will read two sectors and the drive will immediately deactivate for your convenience. "SLOW" mode is now enabled. There is no indication of "SLOW" mode from the computer, the computer simply stops.

5) Remove the HBP disk from the disk drive, turn the computer off, and proceed to use the computer and disk drive as needed in the "SLOW" mode.

6) If you turn the disk drive power off and then on again then the "FAST MODE" is reactivated!

7) If you try running SLOW IT DOWN more than once without turning the disk drive off, there is no further effect, except that since the drives's programabliity is locked out, the disk drive will not immediately deactivate!

8) If you have a reason to run SLOW IT DOWN on a drive other than drive 1, then first set the select switches on that drive to drive 1, run the SLOW IT DOWN program on that drive, and then reset the select switched on that drive back to the desired drive number. Do not turn the drive off while resetting the drive select switches.

DIAGNOSTIC - PURPOSE

The DIAGNOSTIC is the second of the two programs on the reverse side of your HAPPY BACKUP PROGRAM disk. The DIAGNOSTIC checks the 810 ENHANCEMENT hardware, in addition to the some of the standard hardware of your 810 disk drive.

DIAGNOSTIC - HOW TO RUN IT (ANY DRIVE NUMBER)

1) Same as SLOW IT DOWN steps 1-3 except that YOU MUST HOLD THE OPTION BUTTON DOWN on your personal computer when you turn the power on to boot the disk.

2) As soon as the boot disks in completely you will see the message asking you which drive you want to run the DIAGNOSTIC on. If you do not see this, then boot the disk again and make sure you are holding the OPTION button down.

3) REMOVE THE HAPPY BACKUP PROGRAM DISK FROM THE DISK DRIVE!

4) At this point you have the option to run the RPM program rather than the diagnostic. If you wish to run the RPM program, then proceed to step 5, otherwise skip to step 6.

NOTICE : BEFORE ATTEMPTING TO RUN THE RPM OR DIAGNOSTIC PROGRAM ON AN ENHANCED DISK DRIVE, TURN THAT DISK DRIVE OFF AND THEN ON AGAIN NOW! YOU MAY NOT USE THESE PROGRAMS ON AN UNENHANCED DISK DRIVE.

5) To run the RPM program hold the OPTION button down while you enter the drive number (1-4) on which you want to run the RPM TEST. Then insert a DOS formatted non-copyguarded disk into that drive, and press start. The RPM is be continuously updated about every 1/2 second, and has an accuracy of plus or minus 1/2 RPM. Press SYSTEM RESET to stop the RPM program and restart the DIAGNOSTIC program.

6) To run the DIAGNOSTIC program enter the drive number (1-4) that you wish to run the diagnostic on. See the NOTICE above.

7) You now have the option of running either a single cycle or a continuous cycle test. Enter 0 to run a single cycle test, or enter 1 to run a continuous cycle test.

If you enter 0 for the single cycle test, and if all of the first tests are passing, you will be instructed to insert and remove any disk from the disk drive for the WRITE PROTECT test. The disk you are using need not be write protected. If you have a special WRITE PROTECT DEFEAT switch on your disk drive be sure that this switch is disabled. Then press start.

The continuous cycle test does not perform the WRITE PROTECT test since this requires human interaction. The continuous cycle test is used to allow the drive to run for extended periods (such as all night) to make sure there are no warm up problems.

THE DIAGNOSTIC WILL ALWAYS STOP AT THE FIRST FAILURE!

NOTICE - AFTER RUNNING THE DIAGNOSTIC ALWAYS TURN THE DISK DRIVE OFF AND THEN ON AGAIN BEFORE USING IT FOR ANY OTHER PURPOSE.

NOTICE - DO NOT USE A DISK DRIVE WHICH FAILS THE DIAGNOSTIC. HAVE IT FIXED IMMEDIATELY!

HAPPY BACKUP PROGRAM
SINGLE DRIVE VERSION
INSTRUCTIONS AND GUARANTEE

FOR USE WITH THE
HAPPY 810 ENHANCEMENT

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NOTICE

HAPPY BACKUP PROGRAM
SINGLE DRIVE VERSION
INSTRUCTIONS

PURPOSE

The HAPPY BACKUP PROGRAM (HBP) is intended for making duplicates of ATARI executable disks. It can be executed on an Atari 400/800 personal computer with 16K memory minimum. The 810 disk drive must have either the HAPPY 810 ENHANCEMENT or MODIFICATION. As many copies as desired may be produced from one read in of the source disk. Copyguarded disks present no problem to the HBP.

FUNCTION

The HBP makes a track by track duplicate of the source disk. The destination disk tracks that are written are formatted, written, and verified with the same data present on the source disk. It is not necessary to format or initialize the destination disk prior to using the HBP. It is even possible to copy a blank disk, or thin air, producing a blank disk as the result! All tracks written to the destination disk are completely replaced with that track's contents on the source disk. All analysis, reading, formatting, writing, and verification are performed automatically, and efficiently with no special user intervention required.

OPTIONS ON MAIN MENU

C) COPY ANY DISK

Copies any disk in entirety. All 40 tracks of the source disk are copied to the destination disk. With 48K memory in the personal computer, up to 3 insertions of the source and destination disk are required for complete copying, depending on how many tracks of the source disk actually contain data.

E) ENABLE TRACER

Enable the TRACER option. This feature is used in conjunction with the 'T' option. This option programs the disk drive to remember all tracks which an applications program uses while it is loaded in, and then later transmits the tracks used information to the HBP upon reloading the HBP.

T) COPY PER TRACER

Copy only those tracks on the source that are specified by the tracer information either from the 'E' enable tracer, or from the 'T' option on the SPECIAL RECOVERY MENU.

S) SPECIAL RECOVERY

Selects the special recovery menu rather than the main menu. Items on the special recovery menu further enhance the backup function of the HBP.

EXECUTING THE HBP
GENERAL INFORMATION

The HBP is a self booting disk. If you have run the SLOW IT DOWN program it is necessary that you turn the disk drive off and then on again, to unlock the disk drive's programability, prior to loading the HBP.

Remove any cartridges before loading HBP. This is not a requirement but each cartridge plugged in steals memory from the HBP which it would like to use for copying. It is not necessary to remove cartridges if your personal computer has 32K or less memory.

The feature of unique HAPPY BACKUP PROGRAM disks for each disk drive in the earlier revisions has been replaced by a new tracer lock and key scheme which allows your HBP to be executed on any HAPPY COMPUTING enhanced or modified drive.

A bug in Atari's personal computer operating system in older machines causes occasional delays of about 15 seconds in operations which read from or write to the disk drive. If this delay is encountered the best thing to do is to wait it out! This does not cause an error condition with the HBP. A fix for this bug is available from your Atari dealer.

If you press the system reset button on the personal computer during execution of the HBP then all current operations are terminated(prior to completion), the disk drive deactivates, and HBP allows you to return to the main menu. A slight delay may be encountered allowing the disk drive to complete the command it is now executing. Do not press system reset again until the disk drive actually deactivates or the HBP may hang.

The information recorded by the tracer option is not lost until you turn your computer off, allowing you to mix both 'C' and 'T' type copying operations without reloading HBP.

All numeric values printed by HBP are in hexadecimal. Since no user interrogation of this information is usually needed, this should present no problem to the average user.

The HBP must be booted into a HAPPY COMPUTING enhanced or modified drive, and that drive must be drive one in the system for HBP to properly activate and calibrate itself.

COPY ENTIRE DISC
MAIN MENU "C" OPTION

1. If SLOW IT DOWN has been run, turn your drive off and then on again to unlock your drive's programability.

2. If you have more than 32K memory in your personal computer then remove all cartridges. ALWAYS REMOVE GAME CARTRIDGES!

3. Insert the HBP disk, label side up into the disk drive and turn the computer on. Some noise is expected from the disk drive and computer as the HBP loads and calibrates itself.

4. After the main menu appears press C for copy entire disk.

5. Remove the HBP disk from the disk drive.

6. When the message "INSERT SOURCE DISK AND PRESS RETURN" appears then insert the disk you wish to copy into the disk drive and press return.

As HBP analyzes and reads the disk the track number and number of okay status sectors are displayed. No user interrogation of the displayed information is needed. When you are copying a non copyguarded disk formatted by DOS you should get 12 (18 decimal) okay status sectors on each track if there is no problem. Getting an indication of 12 okay status sectors from a copyguarded disk's track does not necessarily mean that there is no copyguard.

Tracks which are completely unreadable are reported as such, and this is determined quickly.

As soon as HBP finishes reading a block of tracks the disk drive will deactivate immediately and you may proceed with step 7 below.

7. When the message "INSERT DESTINATION DISK AND PRESS RETURN" appears then remove the disk you are copying from, insert the disk you wish to copy to, and then press return. It is not necessary that the destination disk be previously formatted.

HBP reports each track number while that track is being formatted, written and verified.

If there is some problem in writing to the disk, such as if you accidentally had a write protect tab on the disk, or if the disk surface is bad you will get a message "ERROR IN WRITING RETRY Y/N" at which point may may type "Y" after you remove the write protect tab or replace the disk to try again, or you may type "N" if you wish to not retry.

As soon as the HBP finishes copying the present block of tracks to the current destination disk the disk drive will deactivate and you may proceed with step 8 below.

NOTE: COPYING IS NOT FINISHED UNTIL THE HBP SAYS DONE!

8. The first time HBP finishes formatting, writing, and verifying a block of tracks the message "ANOTHER COPY OF SAME (Y/N) appears. If you are making only one backup copy then type "N" for no, and you will not be asked this question again if more insertions of the single destination disk are required.

If you answer "Y" to make another backup copy you will be asked this question after each block of tracks is written. HBP does not keep track of how many backup copies you are making. You will need to proceed at step 7 & 8 for each backup copy you are making, for each block of tracks to be copied.

9. When backing up is finished the message "DONE, HIT RETURN TO RESTART" appears. Press return and the main menu will be displayed. HBP is now ready for your next backup task, or turn the computer off and proceed to do your next computer chore.

COPY PER TRACER
MAIN MENU OPTION "E" & "T"

IMPORTANT NOTE ON USING TRACER

Use the tracer option only with self booting disks which load completely all at once and do not require the disk again. DO NOT use the tracer option with programs which require reaccessing the disk once the initial load is completed, USE THE "C" OPTION instead.

TRACER COPYING PROCEDURE

1. Same as steps 1-3 of "C" option.

2. Enter "E" for enable tracer.

3. As instructed, turn the computer power off, DO NOT TURN OFF THE DISK DRIVE!

4. Remove the HBP disk, insert the disk you wish to TRACE.

5. If the disk you wish to trace REQUIRES A CARTRIDGE to load and execute properly, then INSERT THAT CARTRIDGE NOW.

6. Turn the computer power on and allow the program you wish to TRACE to load completely. The disk will read in at the slow it down rate.

7. If this is a game then try and beat your old high score if you wish. This is just for fun, not a requirement though!

8. Turn the computer power off, DO NOT TURN OFF THE DISK DRIVE.

9. Same as steps 2-3 of "C" option.

10. Press "T" note that once the tracer function has been enabled, and tracing has been performed, the "T" option will appear.

11. Same as steps 5-9 of "C" option.

WHY THE TRACER?

The tracer will copy only those tracks needed and will reduce the time required for copying, the number of disk insertions, and the wear on your disk drive and patience.

When used in conjunction with the "T" option of the SPECIAL RECOVERY MENU, the tracer becomes very efficient since the user may select the tracks to be copied.

SPECIAL RECOVERY MENU
THE HOOKS AND HANDLES!

R - RESTORE DEFAULT

The R option sets the retry count, sectors needed and force slow mode variables to the default values. The default values are present when the HBP is first loaded, when a backup is finished, or when the "R" option is selected from the special recovery menu. Selecting "R" from the special recovery menu restores the default conditions and returns to the main menu.

The default conditions are as follows:

CURRENT SCAN RETRIES = 04, CURRENT SECTORS NEEDED = 12, and FORCE SLOW MODE = NO.

In the sections that follow an explanation is provided as to what this all means, and how to change from the default values to other values. The "R" option is generally used if you should change your mind about steering away from the default conditions.

F - FORCED SLOW MODE TOGGLE

Many of the more recent copyguarding schemes require the use of SLOW mode on the ENHANCED disk drive to execute properly. This does present some inconvience to the ENCHANCED disk drive user even though SLOW IT DOWN is simple and fast to execute.

Now you can instruct the HBP to produce a backup copy which contains special information which will force the disk drive to automatically and temporarily switch to the slow mode while reading that backup copy. Therefore SLOW IT DOWN need not be run to read this disk. If you change disks the drive can automatically switch back into the "FAST" mode with no user intervention.

The "SLOW" mode invoked by creating a backup in the forced slow mode is not exactly the same as running SLOW IT DOWN. The slow mode invoked automatically by disks created in the forced slow mode does not lock out the enhanced drive's programability and the ENHANCEMENT is therefore detectable by some of those nasty software suppliers. They are just making their own lives more difficult since they waste time and money writing code to detect the ENHANCEMENT, when after running the SLOW IT DOWN program, the ENHANCED drive is indistinguishable from the standard 810.

Never the less, the forced slow mode is very usefull for the intended purpose. As of this writing, there are no known software items which included code specifically to detect a "NOT SLOWED DOWN" HAPPY ENAHNCED disk drive; but in examining other non standard hardware configurations, this type of detection code is found, so it might be suspected that such code might be written for HAPY COMPUTING'S products.

In any case, if a disk backup produced in the forced slow mode does not execute correctly, you can always run the "SLOW IT DOWN" program to get around this problem.

Pressing "F" from the special recovery menu will toggle the forced slow mode from YES to NO and visa versa. If the display shows NO, then a forced slow mode disk will not be created. If the display shows YES, then the next backup copy produced will be in the forced slow mode.

As with other non default conditons in the HBP, use the "X" option to exit back to the main menu without changing back to the default conditions.

SPECIAL RECOVERY MENU CONTINUED

X - RETURN TO MAIN MENU

The X option returns control back to the main menu, any changes made on the SPECIAL RECOVERY MENU are maintained and the default value are not restored.

T - SELECT TRACER TRACKS

The T option of the special recovery menu is very powerfull! It permits you to specify exactly which tracks you wish to backup from the source disk to the destination disk.

After selecting the "T" option from the special recovery menu you will be prompted for a YES/NO/EXIT (Y/N/X) for each of the 40 possible tracks on the source/destination disk. The number of the track is displayed (in hexadecimal) from 00 to 27 and you may specify "Y" to yes, include the track in the backup, "N" to no, do not include that track in the backup, or "x" to exit, and all remaining tracks are set to "NO". When you enter "X", no variables on the special recovery menu are set back to the default value, and HBP returns to the main menu.

In all cases of using the "T" option from the special recovery menu where at least one track is specified as "Y" yes, then the "T" option COPY PER TRACER will now be available on the main menu, without acutally having enabled the tracer and "TRACED" a disk's loading process.

Selecting the "T" option from the special recovery menu will erase any previous entries into the internal tracer data so any previously "TRACED" disk information is now lost.

The "T" option on the special recovery menu is always used only when the user knows exactly which tracks are to be backed up. Examples of knowing this are listed below.

The first example is for backing up the HAPPY BACKUP PROGRAM. To backup the HAPPY BACKUP PROGRAM without actually "TRACING" it select the "T" option from the special recovery menu and answer "Y" for tracks 0, 1, 2, and 3; and then type "X" when "Y/N/X" is requested for track 4, and use the "T" option for copy per tracer from the main menu. The SLOW IT DOWN / DIAGNOSTIC side of this disk may be backed up by specifying tracks 0 and 1.

The second example is for backing up a disk on which you have already run the "E" enable tracer option on the main menu and by observing and recording the tracks actually reported as needed, enter them later into the "T" option of the special recovery menu for another backup at a later time without actually "TRACING" the loading process again.

The third example would be the "POOR MAN'S APPROACH" to creating your own copyguarded disk of your own software product (rather than by purchasing and using the versatile and easy to use HAPPY CUSTOMIZER PROGRAM). This might be done by copying some copyguarded tracks from an existing copyguarded disk, and placing those tracks of special information on your disk. CAUTION, IT MAY BE A VIOLATION OF COPYRIGHTS TO DUPLICATE SOMEONE ELSES COPYGUARD TECHNIQUE, so consult a legal advisor before doing this.

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These items only have a purpose in recovering data from a disk which is either old or weakly written. Basically by increasing the RETRY limit substantially, and the SECTORS NEEDED slightly you may be able to recover an otherwise uncopyable disk. Note that any changes from the default values may greatly increase the execution time of the HBP. The retry limit may be increased to 255 (x'FF') by pressing the minus key "-" 5 times.

SKEW ALIGNMENT

The skew alignment mode on the special recovery menu may have to be selected in order to back up some of the newest copy protected disks. Skew alignment mode increased the backup time. Use the skew alignment mode when the backup seems to copy okay but will not execute. Keep track of which source disks require skew alignment mode for future convenience.

WRITE ERRORS

Be sure that there is no write protect tab on the destination disk, that you are using good quality destination disks, and that your disk drive is aligned, and the speed adjusted correctly. Also be sure that the disk drive passes the WRITE PROTECT CHECK in the diagnostic.

DISK ERRORS

Be sure that your disk drive passes the DIAGNOSTIC program run continuously, see the diagnostic instructions. A disk error is usually caused by faulty hardware, either the disk drive, cables, or personal computer may be at fault. No user identifyable explanation can be given concerning the six digit error code encountered.

HAPPY BACKUP PROGRAM FIVE YEAR GUARANTEE AND REVISION POLICY

The HAPPY BACKUP PROGRAM comes with a guarantee that you will be able to backup any standard media single density disk which can be read with a standard Atari 810 disk drive, and reliably executed on a 400, 800, or 1200 personal computer, producing an executable copy. If you find such a disk which HBP cannot correctly backup, first contact HAPPY COMPUTING by phone or mail, giving the name, manufacturer, and date of purchase of the disk, and the serial number of your ENHANCEMENT board. HAPPY COMPUTING may have already discovered this problem from its customer base, and be working on or already have a revised HBP. If the problem has not yet been discovered you will be instructed to send HAPPY COMPUTING the original source disk for examination. If this disk contains copyrighted material, then only the original disk from the manufacturer can be accepted for examination. HAPPY COMPUTING will examine this disk and revise the HAPPY BACKUP PROGRAM such that this disk can now be correctly backed-up, or if within 60 days from the date HAPPY COMPUTING receives this disk HAPPY COMPUTING cannot produce a revised HBP which will correctly backup that disk you may at your option return your ENHANCEMENT board and your HBP in working condition to HAPPY COMPUTING for a full refund of all funds that HAPPY COMPUTING was paid excluding all shipping, handling, and insurance charges. This guarantee is effective for five years after the date of purchase of the HAPPY 810 ENHANCEMENT.

In order to receive a revised HAPPY BACKUP PROGRAM it is required that you send HAPPY COMPUTING $5.00 for UNITED STATES, CANADA, and MEXICO, or $7.00 US funds for other countries to cover the media, packaging, shipping, and handling costs. If you are returning a source disk for examination, as instructed by HAPPY COMPUTING, please be sure to include this fee.

HAPPY COMPUTING reserves the right to extend this warranty beyond five years, and or to change the charges for a HBP revision during the warranty period.

WARP SPEED DOS MODULE

PRE-RELEASE

INSTRUCTIONS

The WARP SPEED DOS pre-release load file is located and appears in the ATARI DOS directory on the back side of the HAPPY BACKUP disk. Note that the SLOW IT DOWN and DIAGNOSTIC self booting portion of the disk does not appear in the directory.

WARP SPEED DOS

PURPOSE

The WARP SPEED DOS (WSD) is a software improvement to ATARI DOS 2.0S which greatly improves the speed of both reading and writing with verification. This improvement further utilizes the added performance made possible by the HAPPY 810 ENHANCEMENT. The speed improvement is realized only with 810 disk drives that have the HAPPY 810 ENHANCEMENT, other ATARI compatible disk drives or non-ENHANCED 810s will function with the WSD as usual (SLOW!). No hardware changes are needed for ENHANCED disk drives to run the WSD.

DEFINITIONS

WARP SPEED DOS LOAD FILE (WSDLF)

The binary load file from HAPPY COMPUTING which the user installs into standard unmodified ATARI DOS 2.0S, creating WARP SPEED DOS. The WSDLF need only be used when the user wishes to create WARP SPEED DOS and re-select the AUTOMATIC WARP SHRINK OPTION. This load file is named "WARPDOS.BIN"

WARP SPEED DOS SUPPORT MODULE (WSDSM)

The memory resident portion of WARP SPEED DOS which supports the WARP SPEED disk drive operations. This support module is normally invisible to the user. The WSDSM resides in the personal computer random access memory. Because of this memory residence there may be conflicts with some pre-existing software. The WSDSM attempts to resolve memory conflicts through self relocation and 'shrinking'.

WARP SPEED DOS DISK (WSDD)

A self booting disk created by WARP SPEED DOS, by formatting a disk with WSD and using the "H" DUP menu option to write DOS files to that disk. This disk when booted will enable the WARP SPEED mode of operation on HAPPY COMPUTING ENHANCED 810 disk drives. The WSDD may be used just like a disk formatted by standard ATARI DOS 2.0S, however during formatting the entire first track (18 sectors) of the disk are deallocated. This compares with 3 sectors on a disk formatted by standard ATARI DOS 2.0S. Therefore a WSDD will have 15 less available sectors.

WARP SPEED DOS (WSD)

The programs present on a WSDD which implement the WARP SPEED function. This includes a boot program which is invisible to the user (except for the 18 sectors it occupies on the disk), the DOS.SYS file which is the ATARI file management system (FMS) plus the resident portion of the disk utilities package, and the DUP.SYS file which is the ATARI non-resident program that is called into memory by the 'DOS' call from BASIC (for example) which enacts the functions on the DISK OPERATING SYSTEM menu.

On the WSDD the file DUP.SYS has been renamed (automatically) to WDP.SYS. This is done since the original DUP.SYS program is not compatible with WSD and to facilitate preventing the user from calling the wrong disk utilities package into memory. For example if the user with the BASIC cartridge inserted boots a WSDD disk, and then calls the disk utilities package with the 'DOS' command from BASIC, only the WDP.SYS file may be loaded. If the disk currently inserted does not contain the WDP.SYS file, then the computer returns to BASIC.

The WDP.SYS file may be copied on to any ATARI rev 2.0S compatible disk, using the "O" or "C" DOS menu option. It is okay it have both the DUP.SYS and WDP.SYS file on the same disk since standard DOS will only call the DUP.SYS program and WSD will only call the WDP.SYS program.

The DOS.SYS file MUST only be written by the "H" write DOS files option of the DOS menu. The "H" command in the WSD menu may be used to only write DOS files to disks that are formatted by WSD. DO NOT use WSD to write DOS files to a disk formatted by standard ATARI DOS 2.0S since the extra 15 sectors have not been properly deallocated and loss of other data or programs may occur. DO NOT use the "O" or "C" WSD menu command to copy the DOS.SYS file.

GENERAL USAGE ENVIRONMENT

You may use the WSDD to boot your system, contain AUTORUN.SYS files, and any other programs or data that you would normally use a standard ATARI DOS 2.0S format disk. You may also boot your system with the WSDD and then proceed to use other disks formatted by standard ATARI DOS 2.0S in the fashion of normal DOS and FMS usage. However, do not use WSD to write DOS files (menu "H" option) to any disk other than those that have been formatted by WSD. You may convert entire disks to WSD booting by first formatting a blank or unneeded disk with WSD, writing DOS files to that disk, and then copying all files except DOS.SYS and DUP.SYS from the original to the now WARP SPEED booting disk.

A disk which has WARP SPEED DOS installed, when booted, will place the WARP SPEED DOS SUPPORT MODULE into the memory of the personal computer. This support module uses additional memory in the personal computer to support the WARP SPEED improvement. Under many conditions the user need not be aware that this extra memory is being utilized. YOU DON'T GET SOMETHING FOR NOTHING: under some conditions the extra memory utilized by the WARP SPEED SUPPORT MODULE will cause WARP SPEED DOS to not be compatible with some programs.

COMPATIBILITY

The WSD is available at present only for installation in standard, unmodified ATARI DOS 2.0S, for use with standard format disks. WARP SPEED DOS is not intended for use with self booting copyguarded disks, as it cannot be installed on these disks in a straight forward manner even though the disk may use the ATARI DOS file management system (FMS). WARP SPEED DOS is not available at present for other ATARI compatible operating systems such as LJK DOS or OSA+. HAPPY COMPUTING is willing to work with the authors of such operating systems so that they may also enjoy the benefits of WARP SPEED.

WARP SPEED DOS is NOT GUARANTEED to be compatible with all programs that run under standard ATARI DOS 2.0S. The restrictions are explained in this document. Most programs written in BASIC, PILOT, and machine language will be compatible with WSD so long as they either 1) respect the LOMEM pointer or 2) leave sufficient room in memory to fit the WSDSM. The WARP SPEED DOS support module has been written to try to accommodate as many programs as possible in that the WSDSM which supports WARP SPEED will relocate and shrink itself to make room for other programs. HAPPY COMPUTING has no responsibility to update the WARP SPEED DOS or software from other software suppliers to resolve compatibility problems. Further information is available for advanced users in that section.

INSTALLATION FOR ALL USERS

This section provides installation details for all users. Once the WSDLF is installed and DOS files are written, this procedure need not be repeated since WSD can duplicate itself. If you use an ENHANCED disk drive for step 6 below you will realize some of the speed improvement at that point.

1) Turn off personal computer, remove all cartridges. Turn off 850 interface (if you have it).

2) Turn on disk drive, wait for busy light to go out.

3) Place a standard, unmodified ATARI DOS rev 2.0S disk into the disk drive, and boot this disk. The DUP.SYS "DISK OPERATING SYSTEM II VERSION 2.0S" menu should now appear.

4) Place the HAPPY COMPUTING disk which contains the WARPDOS.BIN file into the disk drive.

5) Use the menu "L" option to load the file "WARPDOS.BIN", remove the HAPPY COMPUTING disk from the disk drive. When the message "PRESS Y FOR AUTO SHRINK MODE" appears you should press any key EXCEPT "Y". WARP SPEED DOS is now enabled, press return to view the new menu.

6) Insert a disk which contains no valuable programs or data into the disk drive and use the "I" menu option to format that disk. Once the disk is successfully formatted use the "H" menu option to write DOS files to that disk.

WARP SPEED DOS - DOs and DON'Ts

HAPPY COMPUTING provides WARP SPEED DOS on an "AS IS" basis with NO warranty as to fitness for a particular use. HAPPY COMPUTING assumes no liability of any kind for loss of programs or data due to malfunction of WARP SPEED DOS. The risk in using WARP SPEED DOS is left entirely to the user! For this reason HAPPY COMPUTING strongly suggests you observe the following list of DOs and DON'Ts! HAPPY COMPUTING makes these RULES and points out that without strict adherence to these rules, computer lockup and or complete or partial program dysfunction (your program bombs, BOOM!) can occur which may lead to loss of data or programs on diskettes!

1) DO NOT use WSD to write DOS files to a disk that is not formatted by WSD.

2) DO NOT use WSD with programs or data for the first time without making a backup of the program or data.

3) DO use WSD with programs that you have previously tested to be sure they are compatible with WSD.

4) DO NOT use the WSD menu function "K" SAVE BINARY FILE with a start address less than x'2500'.

5) DO NOT use the WSD menu function "K" SAVE BINARY FILE with a starting/ending address which causes the memory area x'3400' to x'3CFF' to be within the area saved, UNLESS you are using a MEM.SAV file AND that MEM.SAV file has been written to just prior to the most recent loading and entry of the DISK UTILITIES PACKAGE (DUP.SYS which is WDP.SYS for WSD).

6) Once an ENHANCED 810 is selected and used by WSD, DO NOT turn the power off for that disk drive. The following notes concern ENHANCED drives which have been selected since WSD was booted and for which the power has been cycled. First of all the drive will respond only with I/O errors, until you press system reset. If there has not been a WARP SHRINK you may press SYSTEM RESET, attempts to access an ENHANCED drive after SYSTEM RESET will reprogram the drive, allowing it to be used again without rebooting the system. If there has been a WARP SHRINK then pressing SYSTEM RESET will allow that drive to be used but it will not operate at WARP SPEED.

7) DO NOT POKE locations 1913,80 or 1913,87 while disk files are open from BASIC (for example).

8) DO poke locations 1913,80 or 1913,87 only while no disk file is open for writing. Close all disk files that are open for writing before switching between write with verify (WARP SPEED) and write without verify (standard speed).

There is an occasion when the WARP SPEED write with verify will be less efficient than the standard speed write without verify, this would be in the case where you are intermixing reading of one sector with writing one sector, and you have only one disk drive. This inefficiency is caused by having only one track buffer in the one disk drive shared for both reading and writing operations.

9) DO NOT remove a diskette from a disk drive that is open for writing until writing is finished and the file is closed. If you, for example, open a file for writing while in BASIC, and write to that file, and then press the BREAK button before closing the file and remove the diskette you may find that the disk drive will then only respond with serial I/O errors. This problem may be fixed by pressing the SYSTEM RESET button.

10) DO NOT use WSD to read or write a diskette that was backed up by the FORCE SLOW MODE = YES feature of the HAPPY BACKUP PROGRAM, on an ENHANCED disk drive which is not operating in the SLOW MODE from SLOW IT DOWN. Disks created in the FORCED SLOW MODE cannot be read or written by WSD with ENHANCED disk drives operating in the fast mode.

11) DO NOT use the machine language calls to the ROM based disk I/O routines for reading (standard speed) from an ENHANCED disk drive that is also open for writing.

WARP SHRINK

All users need to be aware of the meaning of the "WARP SHRINK" messages which WSD can produce. The term "WARP SHRINK" means that the WSDSM has attempted to shrink itself to accommodate a binary load file which is now loading into the personal computer memory. This binary load file may be loaded either by the DUP menu "L" command, or by the execution of an AUTORUN.SYS file.

Naturally the question must be: what happens when the WSDSM shrinks itself. The answer is that once the WSDSM has shrunk, you can no longer call the DUP.SYS program into memory by for example the 'DOS' command in BASIC. Also at the moment of "WARP SHRINK" all HAPPY COMPUTING ENHANCED drives in the system are identified and programmed with the WARP SPEED function. The result of this is that any ENHANCED drive with its power not turned on at the moment of "WARP SHRINK" will not be used as a WARP SPEED drive for further disk I/O operations. If you try to call DOS from, for example BASIC, after a warp shrink the personal computer will return to BASIC and DOS will not be entered.

WARP SHRINK MESSAGES

There are three possible WARP SHRINK messages all have the form: cWARP shrink!

The small "c" character preceeding the "WARP shrink!" actually represents one of three possibilities.

The first possibility is a blank (space) character. The warp shrink message preceeded by the blank space means that the WSDSM has shrunk to make room for a binary load.

The second possibility is an inverse video capital "X" character. This message means that the WSDSM has computed that even if the WSDSM would shrink to its smaller size, the requested binary load file would still not fit in memory with the WSDSM. In this case the WSDSM does not shrink itself and loading of the load file is aborted.

The third possibility is an inverse video capital "A" character. This means that the WSDSM was told to always shrink itself upon initial boot up, and this shrink operation has just taken place.

GETTING THINGS TO FIT - COMPATIBILITY

The standard non-shrunk size of the WSDSM module is about 2200 bytes. The shrunk size of the WSDSM is about 850 bytes. This big difference in size is due to the removal of the WSDSM automatic relocation program and the WSDSM WARP SPEED ENHANCED disk drive resident support code from the personal computer memory when the WSDSM has shrunk itself.

The size difference is large enough to have many binary load files not fit (they load too low in memory) unless the WSDSM is shrunk. There may also be many BASIC programs which use most of the personal computer memory and will require that the WARP SHRINK module shrink itself in order to have that program run. Automatic warp shrink must be used in this case.

TURN OFF THE ATARI 850 INTERFACE!

The average user will find that many binary load files will run compatible with WSD if they simply do not allow the interface to boot itself during the initial personal computer loadup. Usually the 850 interface is booted by a short AUTORUN.SYS file. The memory used by the 850 interface support code does not conflict with the memory used by the WSDSM since both of these module relocate themselves into the next available LOMEM area. The memory needed by both the 850 support code and the WSDSM does however add up, and by not booting the interface you will might leave sufficient room for the program you would like to execute.

You may inhibit the 850 interface from booting and taking up memory if you either 1) turn off the interface during initial personal computer bootup, or 2) delete or rename the AUTORUN.SYS file that boots the interface. Note that if the interface is not booted only the "R:" serial port device will not be available. The printer will still work as soon as the 850 interface is turned back on.

AUTOMATIC WARP SHRINK

When installing the "WARPDOS.BIN" binary load file, the user is asked to "PRESS Y FOR AUTO SHRINK". If your press "Y" at this point, and then write DOS files the WSDD you create will cause an automatic shrink of the WSDSM on boot up. This is usefull for running large programs in BASIC or for other binary load files (see advanced user section). You might as well delete the WDP.SYS file from this disk since the disk utilities package cannot ever be called from a disk that has automatic warp shrink.

ADVANCED USER SECTION

The WSDSM resides at one of two places in memory. When the WSDD is first booted or when DUP.SYS (WDP.SYS in this case) is called into memory the WSDSM resides at locations x'3400' x'3CFF'. The WSDSM will continue to reside at these locations if the "L" command is used to load a binary load file and that load file does not load within the memory area x'1D00' to x'3CFF'.

The WSDSM will relocate to lower memory starting at the initial value of LOMEM (x'2E7',2) from FMS initialization, and will adjust the LOMEM pointer to be at 1 plus the current end of the WSDSM during FMS initialization such as when first booting the WSD disk or when RESET is pressed or when any of the following events occur: If a load file loads within the area x'1D00' to x'3CFF', or If the MEM.SAV file is loaded, or If the "B" option (execute cartridge), or the "M" option (run at address) is selected from the menu.

MEM.SAV CONSIDERATIONS

The MEM.SAV file is used as before however there are some important things to note.

When the MEM.SAV file is first created by the "N" option in the WSD menu it will initially be 1 sector long. This really doesn't matter since MEM.SAV is always written by first deleting MEM.SAV and then re-creating it from memory when memory is actually saved.

The area written to the MEM.SAV file will start at the end of the LOMEM location of the WSDSM and continue to where the end of the WSDSM will be after DUP.SYS (WDP.SYS) is loaded. The original length of saved memory for standard DOS was a constant. Since the "DRIVES USED" and "MAXIMUM NUMBER OF CONCURRENTLY OPEN FILES" variables in FMS may be changed by the user, thus altering the initial value of LOMEM after FMS initialization, the WSDSM may start at a different point and so the MEM.SAV may begin at a different point, therefore no longer being of fixed length. It is important to not change the values of these FMS variables execpt using the procedure described herein.

It is not necessary to have a MEM.SAV file to ensure that the WSDSM is not overwritten by DUP.SYS (WDP.SYS) since WSDSM will automatically relocate itself above the DUP.SYS area when DUP.SYS is loaded.

If you wish to change the FMS variables controlling the number of disk drives or the max number of open files you must do this while in BASIC, then enter DOS with no MEM.SAV, and then press reset to return to BASIC. If you are creating an AUTOMATIC WARP SHRINK WSDD you must do this and then re-enter DOS to load the WARPDOS.BIN file.

CALLING WARP SPEED SECTOR I/O

Calling WARP SPEED sector I/O directly in machine language requires that the user setup the IOCB locations $300 to $30B exactly as if the $E459 (serial I/O) vector was to be used. This requires a little more work than calling the disk I/O vector $E453. Then rather than use the $E459 vector you must do an indirect JSR through location $7A3. Whats that? So you say the 6502 has no indirect JSR, right again! To do the job construct a one instruction subroutine of your own which consists of an indirect JMP ($7A3) and do a JSR to your own subr... similar to the ATARI ROM vectors. You must read from a particular disk before you write to it, and do an extra read at the end of all writing to be sure that the last sectors are written.

AUTOC000 MODULE

PURPOSE

The AUTOC000 module is an AUTORUN.SYS file, for use with the BASIC cartridge and WARP SPEED DOS, on ATARI 400 and 800 computers that have a 52K memory system. This autorun file relocates the WSDSM, and the ATARI 850 interface handler program to the $C000 memory area above the address space occupied by the BASIC cartridge. This frees up the ram space that both the WSDSM and 850 handler use in the LOMEM area. This actually gives the user more ram space for BASIC programs than was originally available with the 850 handler in LOMEM without WARP SPEED DOS.

The AUTOC000 module is for use with ATARI 400 and 800 computers that have the $C000 to $CFFF memory page available. This would be the case of a 52K ram system using memory boards such as from INTEC or MOSAIC. Although the ATARI 1200 computer has 64K memory, the operating system ROM must be disabled in order to use the upper 16K, so the $C000 to $CFFF memory area is not easily made available. Therefore the AUTOC000 module is not for use with 1200 computers.

With a cartridge inserted, such as BASIC, the $C000 to $CFFF memory space is not normally used at all, it is wasted! This memory space is now fully utilized by the AUTOC000 file. In addition there is sufficient room to allow the video display screen memory to reside in the uppermost area of the $C000-$CFFF memory space as well for graphics modes 0 thru 5. Moving the video display memory can be done by executing a "POKE 106,208" and then executing a "GRAPHICS n". If you look at the "FRE (0)" memory space this is misleading and care must be taken in this case. The indication is that you have gained about 12K of memory since the space occupied by the BASIC cartridge ROM lies between the actual top of RAM and the video display memory, and this space cannot be utilized as RAM. The actual gain is only about 1K and BASIC will attempt to use its own memory space thinking this is ram, so the user must take care to only use about 1K more memory after doing this.

USING AUTOC000.AUT

The file AUTOC000.AUT must be renamed to AUTORUN.SYS to use this feature. You may append other existing AUTORUN.SYS binary load files to the end of AUTOC000.AUT to have the execution continue with other AUTORUN functions, since the AUTOC000.AUT does not contain a RUN address.

The AUTOC000 program also causes an AUTOMATIC WARP SHRINK (see that section) so you cannot call DOS from BASIC if AUTOC000 has executed. Once AUTOC000 has executed correctly the message "WARP shrink to $C000 complete" will appear. The relocate, WARP shrink, and 850 interface boot functions of the AUTOC000 program may be overriden while a disk is booting by holding down the OPTION button while the AUTORUN.SYS file is executing. This will allow DOS to be called from BASIC and the 850 interface handler will not boot, and presents a convenient way to call the DOS menu without changing disks. NOTE to OMNIMON users: OPTION need only be pressed after the disk has started booting.

AUTOC000 ERROR CONDITIONS AND CAUSES

ERROR #0
$C000 - $CFFF ram not available.

ERROR #1
attempt to load AUTOC000 as a binary load file rather then AUTORUN.SYS.

ERROR #2
either WSD is not installed or the disk already has AUTOMATIC WARP SHRINK.

ERROR #3
WSD revision not compatible with AUTOC000 revision.